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When Enough Is Not Enough: Screening, Brief Intervention and Referral to Treatment for Hepatitis C in Patients Presenting to the Emergency Department

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Chronic hepatitis C viral (HCV) infection is the most common blood-borne infection affecting at least 3.5 million people in the USA.¹ HCV is a public health threat as it can lead to cirrhosis, liver

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decompensation with variceal bleeding, ascites, hepatic encephalopathy, hepatocellular carcinoma or death.² The World Health Organization (WHO) estimates that 399,000 individuals died from cirrhosis or hepatocellular carcinoma caused by HCV infection in 2015.³ In July 2018, the WHO released a statement calling on countries to urgently increase hepatitis testing and treatment to help meet their global goal of eliminating viral hepatitis by 2030 from the nearly 70 million infected individuals worldwide.³ The WHO's provisional target is a 90 percent reduction in incidence and a 65 percent reduction in mortality by 2030.³ Although these are global targets, the disease burden and epidemiological features of HCV in individual countries would determine the national elimination strategy.³

Several improvements have occurred in the recent years regarding HCV treatment from direct-acting antiviral (DAAs) therapies.⁴ Currently, there are several treatment options for HCV, and some of the DAAs are even effective across several genotypes.⁴ The treatment regimens are much more straightforward, oral in therapy with good safety profile.⁴ For example, for a patient who is treatment naïve with no evidence of cirrhosis, there are now regimens that are oral, 8 weeks in duration and offer 100% cure rates.⁴ Moreover, the cost of treatment has decreased over time, and several payers have revoked the treatment restriction criteria established based on the degree of fibrosis.^{5, 6} These developments have made an assessment of fibrosis using a liver biopsy obsolete. Furthermore, non-invasive assessment using vibration-controlled transient elastography is now readily available, easy to perform and affordable.⁷ The WHO recommends offering treatment to all individuals diagnosed with HCV infection who are 12 years of age or older, irrespective of disease stage.³ From our perspective of a large hepatology practice at an academic medical center, there are hardly any barriers left in the treatment and cure of patients that are referred to us with chronic HCV.

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As most people with chronic HCV are asymptomatic, the detection and diagnosis remain elusive for the majority. Therefore, the eradication of HCV depends on preventing transmission, screening, and diagnosing HCV with the intent of linking those identified to care since the feasibility of HCV cure with DAAs is no longer the bottleneck.³ The US Centers for Disease Control and Prevention previously recommended targeted screening of at-risk individuals primarily due to the highest prevalence of HCV in people who inject drugs (PWID).⁸ Subsequently, these recommendations were revised to include age-based cohort screening when it was recognized that the majority of those living in the US with chronic HCV were born between 1945 and 1965.^{8, 9} Screening for HCV continues to remain a top priority as the incidence of HCV has increased 3-fold since 2010, mainly attributed to the opioid epidemic, which has unfortunately impacted persons under 30 years of age due to high prevalence of PWID.⁵ 55-85% of person exposed to HCV will develop chronic infection, and the risk of cirrhosis ranges from 15 – 30% after 20 years of infection with HCV.^{3, 10} Each year, 1 - 3 % of those with cirrhosis progress to the development of hepatocellular carcinoma.^{4, 10} Despite screening the birth-cohort population and those with risk factors, it is estimated that up to half of the population remains unaware of their HCV diagnosis.

Alternative screening strategies to screen more individuals and identify everyone with HCV is critical for the eradication of HCV. One such strategy reported by Schechter-Perkins et al. is a non-targeted, opt-out HCV screening and linkage-to-care (LTC) program implanted in an urban Emergency Department (ED).¹¹ This strategy is similar to the successful Screening, Brief Intervention and Referral to Treatment (SBIRT) program which is a comprehensive, integrated, public health approach for early identification and intervention with patients who have alcohol or other abuse disorders. In this study, a multipurpose best practice advisory (BPA) alerted providers to the program, and for patients who authorized testing, specimens were drawn in the ED for HCV antibody and reflex confirmatory RNA tests.¹¹ Public health navigators then attempted to contact RNA-positive patients to arrange outpatient visits. The authors report that 23% of all RNA-positive patients and 30% of linkage-eligible patients attended their LTC visit.¹¹ This public health

consideration of screening individuals who come into contact with health care via the ED seems a plausible strategy for increased screening, diagnosis of HCV, and linkage to care to capture at least some of the population groups (PWID, people in prisons, men who have sex with men, sex workers, and indigenous people) with high incidence, high prevalence, stigma, discrimination, criminalization and vulnerability who otherwise may be missed and have difficulties in accessing services.³

The strategy for HCV eradication begins with disease prevention through education, disease identification through screening and LTC of those infected, followed by treatment completion for successful disease cure. The high cure rates with current DAAs has brought the focus back to SBIRT.¹ Several aspects of the current study shed light on the success and challenges associated with a seemingly smooth and straightforward SBIRT program. The current study showed that the implementation of the BPA has resulted in 6,950% increase in the screening leading to 292 (7.7%) newly diagnosed HCV patients (Table 1). This strategy also appears to be very successful with 65% of patients attending the appointment after it was scheduled. However, a careful analysis of the program brings with it a host of additional observations worthy of further discussion. These include (a) BPA firing in only 49% of unique patients seen in the ED, (b) only 19% of patients or 39% of BPA fired patients undergoing HCV antibody testing, and (c) only 23% of the newly diagnosed HCV attended the appointment.

The overall prevalence of HCV in the study cohort ranges from 1.5% to 2.9% based on the way the denominator used, i.e., total study cohort or BPA fired respectively (Table 1). Although this prevalence is much higher than the general prevalence, it is much lower than the estimates reported in PWID from the USA.⁴ Therefore, it is possible that the yield of the study would be much higher if the prevalence of chronic HCV were much higher in the study cohort. Also, only 40% of the BPA fired underwent HCV testing raising the applicability of the BPA and the barriers related to it (Table 1). Finally, only 23% of newly diagnosed HCV patients attended the appointment highlighting the issue

that mere screening when not accompanied by highly efficient LTC is an effort wasted.....when enough is not enough!

Table 1. Results of non-targeted opt-out hepatitis C virus screening program¹¹

Event in the cascade						
Unique Patient visits	19,905					
BPA fired	49%	9809				
HCV test ordered	20%	40%	3936			
HCV test performed	19%	39%	97%	3808		
HCV Ab+	2.5%	5.1%	12.8%	13.2%	504	
Viral load performed	2.4%	5.0%	12.5%	12.9%	98%	
HCV RNA+	1.5%	2.9%	7.4%	7.7%	58%	292
Linkage Attempted	1.1%	2.2%	5.6%	5.8%	44%	76%
Patient Successfully Contacted	0.7%	1.4%	3.7%	3.9%	29%	50%
Appointment Scheduled	0.5%	1.0%	2.5%	2.7%	20%	35%
Appointment attended	0.3%	0.6%	1.6%	1.7%	13%	23%

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